

What is Claimed is:

1. An airplane flying toy comprising:
a longitudinal frame bearing a wing and a stabilizer;
a propeller rotatably disposed at an end of the frame;
a force generating device attached to the longitudinal frame and adapted to impart a rotary motion to the propeller by a rotatable shaft; and
a propeller protector extending at least partially around and longitudinally beyond the propeller, the propeller protector being connected by struts to the longitudinal frame.
2. An airplane flying toy in accord with claim 1, wherein the propeller is disposed at a front end of the longitudinal frame.
3. An airplane flying toy in accord with claim 2, wherein the propeller protector comprises a frame disposed about and forward of at least a portion of an upper half of the propeller.
4. An airplane flying toy in accord with claim 3, wherein the propeller protector comprises a frame disposed about and forward of at least a portion of a lower half of the propeller.
5. An airplane flying toy in accord with claim 4, wherein the propeller protector comprises a substantially continuous frame disposed around and forward of the propeller.
6. An airplane flying toy in accord with claim 5, wherein at least one of the propeller protector struts connects to the longitudinal frame at a position behind the wing.

7. An airplane flying toy in accord with claim 6, wherein the propeller protector comprises a carbon rod bent into a curvilinear shape and a connecting member connecting the ends of the carbon rod.

8. An airplane flying toy in accord with claim 7, wherein the longitudinal frame and struts comprise carbon rods.

9. An airplane flying toy in accord with claim 8, further comprising:
a battery comprising at least one of a NiMH and a LiPo cell,
wherein the force generating device is a coreless DC motor having an output shaft connected to a gear in a reduction gear set and the propeller is connected by a shaft to the other gear in the reduction gear set, and

wherein at least one of the wing and the stabilizer comprises a foam structure having a mylar skin attached thereto.

10. An airplane flying toy in accord with claim 8,
wherein the battery is a 145 milliamp LiPo cell,
wherein the motor is a coreless DC motor having an output shaft connected to a gear in a reduction gear set and the propeller is connected by a shaft to the other gear in the reduction gear set, and

wherein the wing comprises an EPS foam structure having a mylar skin with a thickness less than about 6 microns attached thereto.

11. An airplane flying toy in accord with claim 10,
wherein the wingspan of the wing is about 16 inches, and

wherein a combined weight of all parts of the airplane flying toy is less than about 16.5 grams.

12. An airplane flying toy in accord with claim 11, wherein the airplane flying toy is configured to fly at a speed of less than about 1.5 m/s.

13. An airplane flying toy in accord with claim 9, wherein the propeller protector comprises at least one cross-member spanning a distance between a first point on the propeller protector and a second point on the propeller protector.

14. An airplane flying toy in accord with claim 9, further comprising:
a receiver,
wherein the receiver is configured to control, in combination with power provided from the battery, at least one of a throttle adjustment device and an actuator provided to move at least one of a rudder, elevator, flap, aileron, spoilers, and slat from a first position to a second position.

15. An airplane flying toy in accord with claim 2, wherein the propeller protector comprises at least one filament.

16. An airplane flying toy in accord with claim 15, further comprising:
a battery comprising at least one of a NiMH and a LiPo cell,
wherein the force generating device is a coreless DC motor having an output shaft connected to a gear in a reduction gear set and the propeller is connected by a shaft to the other gear in the reduction gear set, and

wherein at least one of the wing and the stabilizer comprises a foam structure having a mylar skin attached thereto.

17. An airplane flying toy in accord with claim 16,

wherein the battery is a 145 milliamp LiPo cell,

wherein the motor is a coreless DC motor having an output shaft connected to a gear in a reduction gear set and the propeller is connected by a shaft to the other gear in the reduction gear set, and

wherein the wing comprises an EPS foam structure having a mylar skin with a thickness less than about 6 microns attached thereto.

18. An airplane flying toy in accord with claim 17,

wherein the wingspan of the wing is about 16 inches, and

wherein a combined weight of all parts of the airplane flying toy is less than about 17.0 grams.

19. An airplane flying toy in accord with claim 18, wherein the airplane flying toy is configured to fly at a speed of less than about 1.5 m/s.

20. An ultra-light slow flying toy airplane comprising:

a frame; and

a battery-powered motor attached to the frame, the motor configured to rotate a propeller;

wherein the frame comprises a main longitudinal element comprising a longitudinal rod, a wing support structure, and a propeller protector structure,

wherein the wing support structure comprises a vertical wing fore strut, a horizontal wing fore strut, a plurality of wing rear struts, and a plurality of chordal struts collectively securing a wing to the main longitudinal element,

wherein the propeller protector structure comprises at least one rod disposed to extend at least partially around and longitudinally beyond the propeller, and

wherein the propeller connector is connected to at least one of the wing support structure and the main longitudinal element by a plurality of struts.

21. An ultra-light slow flying toy airplane according to claim 20, wherein at least one of the main longitudinal element, wing support structure elements, and propeller protector structure rod is a carbon rod.

22. An ultra-light slow flying toy airplane according to claim 21, wherein the battery-powered motor is a coreless DC motor, and wherein the wing comprises an EPS foam structure having a mylar skin with a thickness less than about 6 microns attached thereto.

23. An airplane flying toy in accord with claim 9, further comprising:
a receiver,
wherein the receiver is configured to control, in combination with power provided from the battery, at least one of a throttle adjustment device and an actuator provided to move at least one of a rudder, elevator, flap, aileron, spoilers, and slat from a first position to a second position.

24. A propeller and propeller protector combination for flying toys, comprising:

a propeller configured to rotate about a center axis;

a frame disposed forward of and around the propeller;

a plurality of struts connected, at a first end, to the frame and disposed to extend away from the frame in a direction toward and around the propeller and to connect, at a second end, to a frame member behind the propeller,

wherein a distance between the connection between the plurality of struts and the frame member and the center axis is less than a corresponding distance between the frame and the center axis.